AN

ESSAY

ON

CANTHARIDES:

COMPRISING,

A BRIEF ACCOUNT

OF THEIR

NATURAL HISTORY;

AN

INQUIRY

INTO THEIR

Mode of Operation,

AND

THEIR USE IN DISEASES:

WITH

SOME REMARKS

RELATIVE TO THE

TIME WHEN THEY SHOULD BE EMPLOYED.

By JOHN PARKER GOUGH,

Of Charleston, South-Carolina,

MEMBER OF THE PHILADELPHIA MEDICAL AND CHEMICAL SOCIETIES.

Phœbe fave, novus templa tua ingreditur.

TIBUL.

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AN

INAUGURAL THESIS

FOR THE DEGREE OF

DOCTOR OF MEDICINE,

SUBMITTED TO THE

EXAMINATION

OF THE

REV. JOHN EWING, S. S. T. P. PROVOST;

THE

TRUSTEES & MEDICAL FACULTY,

OF THE

UNIVERSITY OF PENNSYLVANIA,

On the thirty-first of May 1800.

TO

BENJAMIN RUSH, M. D.

PROFESSOR OF THE INSTITUTES AND OF CLINICAL MEDICINE,

IN THE UNIVERSITY OF PENNSYLVANIA.

DEAR SIR,

DID no other conſideration than that of *gratitude*, prompt a dedication of this to you, your eminence in public, and your virtues in private life, would alone demand this tribute of reſpect to your talents. But impreſſed, Sir, as I am, with a lively ſenſe of your favours, I could not forego the preſent opportunity of making a public acknowledgment of my feelings, and of dedicating this the firſt eſſay of thoſe advantages I derived from your inſtructions, while I had the honour of being your *pupil*. In thus ſoliciting your patronage, however, I do not flatter myſelf with preſenting you any thing worthy of your notice. "It is not ſuch as I wiſhed it, but ſuch as I have been able to make it."

Your candour, therefore, will look with indulgence on the attempt, and credit me for the aſſur-

ance of my wiſhes, that it was equal to the high reſpect entertained for your character. Accept, Sir, my affectionate regards, and permit me to ſubſcribe myſelf

Your friend and pupil,

J. P. GOUGH.

TO

BENJAMIN SMITH BARTON, M. D.

PROFESSOR OF MATERIA MEDICA, NATURAL HISTORY AND BOTANY,

IN THE UNIVERSITY OF PENNSYLVANIA.

SIR,

I TAKE a pleaſure in inſcribing this to you, as a public teſtimony of the high reſpect I entertain for thoſe talents which will juſtly acquire you the honour due to merit; and as an acknowledgment of the friendly attentions I have received from you, during my reſidence in this city.

With ſentiments of eſteem,
I am, Sir,
Your friend and obedt. ſervant,

J. P. GOUGH.

TO

TUCKER HARRIS, M. D.

OF

CHARLESTON, SOUTH-CAROLINA.

My much respected Sir,

PERMIT me also to testify my *high* sense of your *worth*, *talents*, and *deportment* in life, by inscribing to you the following pages. And be assured, Sir, that the recollection of one, under whose care I commenced my medical pursuits, and of whose friendship I feel proud, will ever warm the breast of

Your very sincere friend
And former pupil,

J. P. GOUGH.

AN

INAUGURAL ESSAY

ON

CANTHARIDES, &c.

THE effects of diſeaſes on the animal economy naturally lead to an application of thoſe medical principles which were taught to man by accident, or by analogical deductions. The inveſtigation therefore of the properties of natural bodies, conſequently became an object of his attention and inquiry. In proportion as civilization advanced, diſeaſes, by aſſuming new aſpects, required more powerful remedies than thoſe with which he was acquainted. He extended his purſuits beyond the narrow limits of common obſervation; nor was he fruitleſs in his reſearches. The introduction of *cantharides* into medicine, opened a new field of ſucceſs to the practical phyſician; and marked a fortunate era in the annals of our art. For though much has been ſaid of their *inefficacy*, and of the *ill effects* of their application, time has not deſtroyed our confidence in their virtues. And indeed, were we to carry our reſearches into the multitude of articles ſo various and important which nature ſubjects to our knowledge, I know not if any could be found more

deſerving of attention, or of more extenſive utility in the practice of medicine.

Cantharides were known to the ancients; but the kind they uſed is very different from the common *meloe*, of which they appear to have been ignorant. It is the *meloe chichorei* of *Linn.* they were acquainted with; which Dr. *Barton* thinks, is greatly reſembled by the *potatoe fly* of our country. It is ſomewhat ſurpriſing, however, that they had no knowledge of their property of *bliſtering*, until long after *Hippocrates* flouriſhed. The firſt accounts of their uſe in diſeaſes we have in the writings of the *Arabian phyſicians*, who employed them as *incitants* or *ſtimulants* in affections of the apoplectic claſs. *Aretræus Cappadox*, a perſon of learning and judgment, who lived, it is ſaid, a little before *Galen*, is entitled to the credit of firſt introducing theſe inſects into medicine as an article of the materia medica. His method was to rub them on the head until a *bliſter* was produced; but this is now very properly laid aſide. It appears probable, that accident gave riſe to the diſcovery of the veſicating quality of *cantharides*—inductive reaſoning conſequently aroſe—experiments were inſtituted—and experience finally gave a ſanction to their efficacy.

The cantharides now in general uſe are called *Spaniſh flies*, from the circumſtance of their having been formerly brought from Spain; but they are now met with in many countries of Europe. The

largeſt and beſt are brought from Italy. A *ſpecies* of *cantharis*, as I have already hinted, has lately been diſcovered in the *United States*, equal if not ſuperior to that which is imported. The firſt account of them that appeared, was in the *Medical Repoſitory* of *New-York* by a Dr. *Chapman*. This inſect has no reſemblance to the *meloe veſicatorius* except in ſhape: its colour being far different, and its ſize in general ſmaller. The head is inflected, and of a browniſh red, with two dark ſpots inclining to black of a ſemilunar form on its top. The *antennæ* or feelers are black, and appear upon cloſe inſpection to be formed of many joints. The *tarſi* have five articulations. The mouth is armed with jaws and ſupplied with *palpi*. Their *elytræ* or wing caſes are black, having a pale yellow colour at their margin, and one in the middle; though I have ſometimes ſeen two. The inner margin of each elytra has not ſo wide a ſtreak of yellow as the outer; but when brought in appoſition to the other, is full as wide, and makes a middle ſtripe. If the elytræ and the wings be removed, we ſee on the back a moſt beautiful yellow colour, with a dark ſhining line about the twelfth of an inch in diameter, extending along the middle. But if the body of the inſect be pulled out, this apparent line is found to be ſhining dark ſpots of a quadrangular form, interſected by the yellow colour. This yellow colour in the male is not ſo brilliant as in the female. If a parallel line be drawn from between each of the

ſpots juſt mentioned, we find, near where the yellow is terminated by the under part of the body, five dots diſpoſed in a row. Theſe dots I could not find in the male. The hard white ſubſtances in the abdomen, diſcovered by Dr. *Chapman*, are only to be found in the females. The females are much larger than the males; and their bodies project conſiderably beyond the elytræ: whereas the body of the male is nearly covered by the wing caſes. The body, in both ſexes, ſeems to be formed of folds protruded one within the other. This is rendered perceptible when extenſion is employed: for then four tranſverſe grooves or *ſulci* are diſcoverable on the abdomen, which were before hid by what appear to be hairs of a duſky-aſh colour that clothe this part. The wings of theſe inſects are conſiderably longer than their bodies; but when drawn in, are ſo folded at their extremities, that they are eaſily covered by their caſes. They have a peculiar faintiſh, pungent ſmell, and become darker coloured by drying. Dr. *Chapman* found the effluvia from them ſo acrid, as to create an uneaſy ſenſation in his head and noſtrils. He recommends them to be dried in the ſhade, as more of their active properties might thereby be retained. Theſe inſects are principally found on potatoe vines; the leaves of which they are very fond of. Dr. *Chapman* found them alſo on beets and garden purſlain. I have found them on the clover in meadows, when the leaves of the potatoe begin to be deprived of their ſucculency.

It appears from ſome experiments the Doctor made, that every part of the inſect is equally endowed with a *veſicating* quality. Dr. Woodhouſe has diſcovered two other ſpecies of this fly.

The *veſicatorius*, or the common *bliſtering meloe*, is the ſecond ſpecies of the inſects of the genus *meloe* in *zoology*, of the order *coleoptera*. It is an inſect of the beetle kind, nine or ten lines in length, of a ſhining golden green colour, mixed with azure. The *antennæ* are jointed, the laſt joint being oval; the breaſt is ſomewhat round; the *elytræ* ſoft and flexible; and the head inflected and gibbous. It multiplies greatly. They are ſometimes ſeen flying in ſwarms. They are deſtroyed by the fume of vinegar. They have a ſtrong nauſeous ſmell, that is, when they are freſh, ſimilar to the ſmell of liquid pitch. It is this peculiar ſcent which leads to a diſcovery of them when ſought for. It is ſaid, that when diſturbed at night by the approach of an enemy, the trees on which they reſt appear as if illumined by fire, ſo reſplendent is their apparel. They are poſſeſſed of great levity, ſo much ſo that fifty of them ſcarce weigh a drachm. When taſted, a pungent flavour is ſoon communicated to the tongue and fauces; and, according to ſome writers, the effluvia from them is very *acrid:* but this ſeems to diminiſh with their age; at leaſt if I may form a judgment from what takes place in the bliſtering fly of our country. Their virtues probably depend, in ſome meaſure, upon this volatile principle: hence

the reaſon, why the *American cantharides* more certainly and more quickly induce veſication, than thoſe which are imported, as appears from ſome comparative experiments inſtituted by a friend of mine. *Newman* ſays, they are found chiefly in the ſpring ſeaſon, and on aſh and poplar trees; the former they ſeem to prefer. Cantharides, if preſerved, in a few years appear to ſuffer a ſpontaneous decompoſition. They are reduced into a fine powder.

There are *many other* ſpecies, differing in ſize, figure and colour. Nature has clothed almoſt all of them, in a ſplendid manner. Green, azure, together with a golden hue, render them dazzling to the ſight. In this genus, as well as in ſome others, the females, it is aſſerted court, and in the act take the place of the males. The females depoſit their eggs in the ground; whence proceed larvæ, which paſs through the chryſalid ſtate, in order to attain that of *meloes*.

The firſt effect of the application of *cantharides*, to the ſurface of the body, is a ſenſation of itching.* This ſeems to be the univerſal conſequence of a *bliſtering* plaiſter, and moſt probably depends upon the mechanical ſtimulus of the flies. When it does not occur, it may be aſcribed to a want of ſenſibility

* Bliſters in ſome perſons, often produce an *eryſipelatous* affection, reſembling the *nettle-raſh*. I have known one inſtance of the kind, in which the application of a *bliſter*, was always followed by this eruption. It was relieved, and finally removed by waſhing the part with a ſolution of *ſaccharum ſaturni*.

on the cuticular surface. If the *cantharides* be permitted to remain, *inflammation* is excited; and, in the course of eight or nine hours, an effusion of serum from the exhalent vessels takes place, beneath the cuticle, that is termed a *blister*. And this effect they always produce if applied to parts, the sensibility of which still remains *unimpaired* by the action of disease; for *cantharides*, when employed in such circumstances, scarcely ever excite a vesication of the skin, unless the system, by proper remedies, has been reduced, *if above*, and brought up, *if below*, to what may, with propriety, be denominated *the point of sensation*, or what I shall hereafter call the *blistering point*. This property appears to reside in *every* part of the fly; and is equally extracted by a spirituous and watery menstruum. But the former is thought the best preparation for internal use: an opinion that does not appear founded on accuracy of observation. The dose of cantharides in powder, may be from one-fourth of a grain to six grains; and of the tincture, whether watery or spirituous, from five to fifty drops, bis die. By beginning with a small dose, and gradually increasing it, a much larger quantity may be given. But if an overdose of cantharides be taken, a discharge of blood, by urine, with exquisite pain follows, succeeded by an inflammation of the whole intestinal canal; *the stools become mucous and purulent; the breath fœtid; intense pains are felt in the hypogastric*

region; the patient faints, grows giddy, and expires delirious.

There are many articles, belonging to the vegetable kingdom, that likewiſe poſſeſs this *veſicating* quality; but the diſcharge induced by them, is leſs plentiful, than that which is effuſed by the action of *cantharides*.

Does *cantharides* exert any effect upon the urinary ſyſtem, inducing diureſis? This queſtion ſeems to have divided the opinions of medical men. Dr. Cullen, and Dr. C. Smyth, are inclined to deny any ſuch power, while others of equal reſpectability, aſſert its efficacy in this reſpect. It is certain that *cantharides* were employed by the *ancients* for this purpoſe, long before they were uſed or known as veſicatories. *Hippocrates*, the great father of medicine, gave the fly in ſubſtance as a *diuretic;* and many writers of modern date, have exhibited the tincture with the ſame intent, for the cure of many diſeaſes, more particularly of *dropſies*. In one inſtance, I thought I found the tincture evidently diuretic. Upon the whole therefore it appears, that *cantharides* are poſſeſſed of a diuretic property; and in the ſupport of this opinion, I am happy in having the teſtimony of Dr. *Barton*, who, in his lectures, inculcates his firm conviction of their powers, in inducing *diureſis*. Dr. Jackſon alſo, whoſe name juſtly ſtands high in the medical world, coincides in the opinion.

Is the action and mode of operation of *bliſters*, directly on the ſkin, or by the abſorption of their ſtimulating particles? A great diverſity of ſentiment exiſts alſo on this head, ſome contending for the former, while others endeavour to ſupport the latter opinion. This colliſion amongſt phyſicians, may be readily determined by obſervations, deduced from an attention to their effects upon the human economy. I ſhall with deference endeavour to elucidate this point, by offering the reſult of ſuch reflections on the ſubject, as have occurred to me. The action of *bliſters*, ſeems to me to be only referable to a *local irritation* on the *extremities* of the capillaries. This action does not appear to be extended to the *abſorbing* veſſels, at leaſt in an *equal* degree: if it did, I can readily conceive, that no *bliſter* would be the conſequence, becauſe, as ſoon as the ſerum was diſcharged by the extreme veſſels, the *abſorbents* would take it up. The circumſtance of *ſtrangury*, being induced by an *epiſpaſtic*, cannot be advanced as an objection to this opinion; for we well know, that from a law of ſenſation, *motions* or *impreſſions* made on *one* part of the body, excite *motions* and *ſenſations* in *another*. This may be illuſtrated by the *datura ſtramonium*, or *James-town weed*, which it is ſaid, when applied to *buboes* produce convulſions——now here is impreſſion on *one* ſyſtem, and action in *another*. Certain it is, that there ſeems to be a *peculiar* relation or *affinity* ſubſiſting between medicines and the different ſyſ-

tems of our animal frame.* This opinion is very ſtrongly inculcated and very ably ſupported by the learned Profeſſor of the Materia Medica. The ſame explication, therefore, may be extended with evident propriety to account for the effects of *cantharides* when applied to the body, without recurring to the proceſs of *abſorption.* That *ſtrangury* then ſhould depend upon a *peculiar irritation* induced on the ſurface of the ſkin, by a *bliſtering* plaiſter, is not more extraordinary, than that *tartar emetic*, when rubbed into the palms of the hands, ſhould excite vomiting; or that ſneezing ſhould be produced from certain *errhines* being taken into the ſtomach.† If the powdered root of white hellebore, (the *veratrum album* of *Linn.)* be applied to any ſore, it excites nauſea and vomiting. The ſame effect very frequently reſults from the application of *tobacco.* In theſe caſes, as the affection of the ſtomach is *almoſt* immediate, it can only be explained upon the principles juſt laid down.

But further; if the occurrence of *ſtrangury*, after the application of *bliſters*, depended upon the *abſorption* of the *acrid* particles of the flies, ſurely this ſymptom would *not only invariably* enſue, but

* Dr. Ruſh has divided the body into ſeveral different ſyſtems. This diviſion appears to be eſtabliſhed on very juſt principles. Might it not be adopted for a new arrangement of the Materia Medica, according to the action of medicines on *each* ſyſtem?

† The honey which the bees prepare from the flowers of the *kalmia latifolia*, when ſwallowed, excites ſneezing.

Barton's Lectures.

would take place in a *little time* after they were applied, as we know abſorption to be continually going on in the human body; whereas, it is undeniable, that *ſtrangury* does not *always* take place, and when it does, it is not, I believe, till after *ſome time* has elapſed.*

Again: if this *ſymptom* be referable to the principle of *abſorption*, it ſhould be in an *equal* ratio, in point of violence, to the *ſize* of the *bliſtering plaiſter*, and to the *time* allowed it to remain on; neither of which circumſtances, I have ever found to take place. Perhaps it may here be aſked, how then ſhall we explain the fact, that *ſtrangury* is prevented and relieved by large draughts of water and other liquids. In anſwer to this, I muſt candidly acknowledge my ignorance; but at the ſame time muſt beg leave to obſerve, that the explanation generally offered, of its *waſhing away* the *cantharides* from the coats of the urinary veſſels, appears too unphiloſophical to be admitted as a ſolution of the queſtion. The opinion I have endeavoured to advocate, will perhaps derive ſome ſupport from the fact, that the ſymptom of ſtrangury is not *peculiar* to *cantharides*. Many ſubſtances produce it. The *ſolanum*, or *night-ſhade*, for example, not unfrequently produces it. It is alſo the conſequence ſome-

* Strangury is not *unfrequently* a ſymptom of fever. It ſometimes occurs in the influenza. It is very probable from this circumſtance, that ſuch an affection is often aſcribed to *bliſtering*, when, in fact, it is ſymptomatic of general morbid action. If it occur, in either caſe, it is conſidered as a favourable indication.

times, of the exibition of *nitre*. *Opium* is ſaid to produce it; and *camphor*, according to Dr. *Heberden*, will as certainly excite ſtrangury as *cantharides*.

From what has been ſaid, it may readily be conceived there is nothing *ſpecific* in the action of cantharides, as relates to their uſefulneſs; and that the ſymptom induced by *bliſters* may be rationally accounted for without calling in the aid of *abſorption*. When they produce *ill effects*, it is ſolely by their ſtimulus on the ſkin communicating *impreſſion* thro' *ſympathy*, to other parts of the vaſcular ſyſtem: hence they quicken the pulſe and occaſion thirſt, &c. &c. I have ſaid that there is nothing *ſpecific* in the action of *cantharides*: on the contrary, the cure of diſtortions of the ſpine, of white ſwellings, of local pains, and other complaints, by means of *ſetons*, *cauſtics*, *ſinapiſms*, and applications of a ſimilar nature, is to be explained on the *ſame* principles as *bliſters*. *They invite morbid excitement to an external part; keep up a ſerous effuſion; and by their ſtimulus exciting new impreſſions, thereby weaken and tranſcend diſeaſed action in other parts of the body.*

This is the explanation I would give of the mode of operation of *bliſters*. It is upon theſe principles I would refer their good effects, when *properly* applied. The firſt of theſe poſitions may be exemplified by the circumſtance, that *ulcers*, whether the effect of a *morbid conſtitution* or of *art*, ſeem the beſt appropriated as *preſervatives* againſt the action of the external agents of diſeaſe. This is an obſerva-

tion of the firſt practical writers. During the great plague in London, Dr. Hodges found, that whenever he was expoſed to the contagion of the diſeaſe, he experienced *great pain* from a ſeton he had in one of his legs.

This determination of action to this weakened part, probably was the means of preſerving his life. Dr. Gallagher, I was informed by Dr. *Ruſh*, aſcribes his eſcape from the *yellow* fever, during its prevalence in 1797 to his creating and keeping up an artificial excitement on his wriſts, by means of *perpetual bliſters*. It is upon this principle alſo, that *bliſters* are ſometimes applied to the extremities in caſes of irregular gout, in order to reinvite the morbid action to its primary ſeat.

Dr. *Cullen* does not aſcribe much to the diſcharge from *bliſters;* and indeed ſeems to think indifferently of their powers, whether as *ſtimulants* or *evacuants*. It muſt be confeſſed, that much cannot be expected from this laſt, except in *local* affections, and perhaps in ſome hydropic caſes, when by decreaſing the quantity of the effuſed fluid, the *abſorbents* recover their tone, and reſume their wonted action. But their efficacy appears, in a *great* meaſure, if not *wholly*, to depend upon the ſtimulus, or *new* impreſſion which they excite, when timely employed. Dr. Percival, if I recollect rightly, ſeems to be of the ſame opinion. This is more particularly illuſtrated by the great uſefulneſs of *bliſtering* in nervous diſeaſes, and in the low ſtates of fever. It is there-

fore by keeping this in view, and regulating the ſtate of the ſyſtem accordingly, that we are to look for advantages from the application of *bliſters*.

The *proper* time of applying *bliſters*, has been a ſubject of ſome inquiry and controverſy. This however depends, as is evident from what has been ſaid of their mode of operation, upon the *ſtate* of the ſyſtem. It is from an inattention to this circumſtance, as has been juſtly obſerved by Dr. *Ruſh*, that there have been ſo many diſputes among phyſicians reſpecting their efficacy. When applied in a ſtate, ſays he, of great arterial action they do harm; when applied after that action has nearly ceaſed, they do little ſervice.

Hence bliſters are moſt ſerviceable in thoſe caſes of fever, in which there is not *too* great an increaſe, nor *too* great a diminution of what has been termed excitement. The reaſon, therefore, why ill effects have been aſcribed to the uſe of *bliſters* is ſufficiently obvious. They ariſe from an *untimely* application. For *bliſters* may be employed with advantage in *all* fevers, provided they are applied at the *bliſtering point:* that is, after the *phlogiſtic diatheſis* of the ſyſtem, has ſo much abated by depleting remedies, that the irritation produced by them on the ſkin, ſo far from proving a ſtimulus to the complaint, will rather ſerve to *counteract* the excitement exiſting in other parts of the ſyſtem, and thus act revulſively, giving a centrifugal determination to the force of the diſeaſe, and thereby ſaving parts eſſential to life.

To accompliſh this purpoſe, they ſhould never be employed in *highly* inflammatory fevers, until the third or fourth day; and not even then unleſs the ſyſtem has been reduced, becauſe the *excitement* in ſuch caſes is moſt commonly *too* ſtrong to be divided or overcome by the action of epiſpaſtics. And hence the reaſon that *bliſters*, when applied without premiſing depletion, and reducing the ſyſtem to what I have already called the *bliſtering point*, in diſeaſes of great action, ſcarcely if ever riſe and fill. And if they do, the ſtate and diſcharge of the matter is ſuch, as ever to afford to experienced nurſes a pretty juſt conjecture of the different degrees of malignity in the fever. The preceding obſervations derive no inconſiderable weight from the teſtimony of Dr. *Huxham*, who has incontrovertibly eſtabliſhed the impropriety of *bliſtering* in all caſes where there is a tendency to *much* inflammation.

But in fevers of *moderate* action, *bliſters*, after gentle evacuations, may be employed with *ſafety* and *advantage* on the ſecond day of the diſeaſe. They are *particularly* ſerviceable, when the patient becomes languid, or comatoſe in the more advanced ſtate. In thoſe caſes, however, where fevers of a highly inflammatory grade, from their *long* continuance, or from other circumſtances, have aſſumed or approached to the *typhus ſtate*, *bliſters* are one of the principal remedies, and ſhould be employed without much regard to the depleting plan: indeed

in ſuch caſes, the ſyſtem labours under ſo great debility, as to preclude the propriety of uſing evacuations, unleſs to a very moderate degree, and at long intervals of time; and *then only* in the *indirect* ſtate that ſometimes takes place in fevers of this claſs.

To derive the greateſt advantage from the uſe of *bliſters*, it appears beſt to apply them one after another; ſo that as ſoon as the firſt ceaſes to diſcharge, a freſh one ſhould be applied. In confirmation of this, it may be obſerved, that generally when a *bliſter* begins to dry, as it is termed, the ſymptoms of the complaint become aggravated, but are relieved by the operation of the next: hence the propriety of ſucceeding one by one. This will ſerve to illuſtrate what I advanced relative to the good effects of *bliſters* depending *greatly*, and almoſt *wholly*, upon the *ſtimulus* or *impreſſion* which they excite. Greater benefit ſeems commonly to be experienced from *bliſters*, when applied to the moſt *ſenſible* parts of the body, as on the *inſide* of the *arms*, *thighs*, and *legs*; though, if any ſymptom in a *particular* part ſhould require it, a *bliſtering* plaiſter may be uſefully applied there.

Would not the uſe of *bliſters* be attended with more ſucceſs, if applied, when practicable, to *thoſe* parts, between which and the *diſeaſed*, there may exiſt a greater ſympathy, than between them and other parts of the ſyſtem? Is not this opinion ſubſtantiated by the fact, that *bliſters*, when neceſſary in *ſmall-pox*, are *more* ſerviceable if applied to the

inoculated part? And does it not receive additional ſupport from this, that when *epilepſies* ariſe from an uneaſy ſenſation in the arm or leg, a *bliſter* applied there is the *moſt effectual remedy?* The celebrated *John Hunter* ſeems to have had ſome idea of *veſicating ſubſtances* curing *diſeaſed parts*, when applied to *others* in *ſympathy* with them. "I can even ſuppoſe, he ſays, a local diſeaſe cured by *ſympathy* and by *that* medicine which would increaſe it, if applied immediately to it. Let us ſuppoſe, for example, any diſeaſed mode of action, and that this mode would be increaſed by ſome irritating medicine if applied to it; but apply this irritator to ſome *other* part which this diſeaſed part *ſympathizes* with, and that the ſympathetic act in the diſeaſed part ſhall be the ſame as if its ſpecific irritator was applied: then, in ſuch a caſe, the medicine would cure by *ſympathy*, although it would increaſe the diſeaſe if applied locally, or have no effect at all." In aſſenting, however, to this opinion, I do not mean to infer the univerſal application of *epiſpaſtics* to *ſuch parts* in *ſympathy*. For example, I do not ſuppoſe, that in caſes of hepatitis, a *bliſter* to the ſhoulder would be ſo efficacious as when applied over the affected part. But it may be obſerved, on the other hand, that an attention to *ſuch connexive influences* in *bliſtering* promiſes to be of ſome utility. Hence probably it will be found, in the courſe of practical obſervation, that in *all* ſtomach and bowel complaints, but more particularly the

former, *bliſtering* the *feet* or *legs* will be attended with *more* benefit, than *bliſtering other* parts of the body.

Having thus given a hiſtory of the *cantharides*, and endeavoured to ſhew, that the ſymptom of *ſtrangury* does *not* depend upon *abſorption*—having alſo pointed out the proper period for the employment of *bliſters*, and attempted an explanation of their mode of operation—and having made ſome deſultory obſervations relative to their ſympathetic influence, let us proceed in the next place to ſpeak of the uſe of *epiſpaſtics*, in ſome particular diſeaſes. And firſt, in intermittents. To the efficacy of *bliſters* in fevers of an *intermitting* type many reſpectable writers bear teſtimony. Dr. *Lynd* in particular recommends the uſe of bliſtering in *obſtinate* intermittents. The application of *bliſters* in diſeaſes of this claſs has been found to render the ſucceſs of the *bark* ſtill more certain. In *intermittents*, when the *bark* had before been given without avail, I have ſeen a large *bliſter*, between the ſhoulders, of the greateſt utility in aſſiſting its operation. And Dr. *Ruſh* aſſures us, that in all thoſe caſes of autumnal intermittents, whether *quotidian*, *tertian* or *quartan*, in which the *bark* did not ſucceed, after three or four days trial, he had ſeldom ſeen it fail after the application of *bliſters* to the wriſts. This obſervation is of great importance; for it will probably be found, that the failure of the *bark* in *intermittents* and *other* diſeaſes can almoſt always be aſcribed to

its being exhibited when an undue action prevails in the ſyſtem. In ſuch caſes, therefore, previouſly to the uſe of the bark, *bliſtering* promiſes to be of the moſt eſſential ſervice, as a conſiderable force of the diſeaſe is thereby concentrated to an external part, and the ſyſtem conſequently rendered more fit for the power of the *bark*. The conſtant *heavineſs* of the *head* occaſioned by *tertian fevers*, and thoſe *head-achs*, which often take place after an *intermittent* has ceaſed, are beſt relieved by the application of a *bliſter* to the neck. Might not the recurrence of a ſecond paroxyſm of an *intermittent* be prevented by the timely application of a *bliſter* to the neck, without having recourſe to the tedious uſe of the *bark*. A caſe of this kind, which came under my knowledge, ſeems to warrant the experiment. Dr. Barton thinks that *ſinapiſms*, from the circumſtance of their being more painful than *bliſters*, would prove more powerful in deſtroying the aſſociation of intermittents.

Bliſters have been alſo *ſucceſsfully* employed in the cure of the *remittent fever*. But they ſhould *never* be uſed, as the judicious Dr. *Lind* obſerves, till the fever has been of *long* continuance, or the *ſpirits* and *pulſe* of the patient has begun to flag. The diſeaſe ſoon ſuffers a remiſſion after their application. Dr. *Ruſh* in his account of the *bilious remitting fever* of the year 1780, informs us, that he always had recourſe to *bliſters*, if the fever did not intermit after the third or fourth day. They ſeldom failed of

producing an *intermiſſion* in the fever the day after they were applied. He thinks more immediate good effects were derived from *bliſtering* the neck, and behind the ears. In the *remitting fever*, which prevailed at Portſmouth and the adjacent country, Dr. *Lind* found a *bliſter* to the back of great efficacy in relieving the violent *head-ach* that moſt generally accompanies, and is peculiarly diſtreſſing in this diſeaſe. He often obtained a perfect intermiſſion by the application of a bliſter to the back, and the exhibition of ſome ſudorific medicine. When, ſays he, the *head-ach* and *giddineſs* were very violent, and the *pulſe* neither *full* nor ſtrong, I ordered a bliſter to the back, and endeavoured to reduce the fever into an intermittent form, by giving half a grain of tart. emetic, with a few grains of nitre every ſix hours. Thus a perfect intermiſſion was often obtained, and the bark was then adminiſtered without delay. A *bliſter* to the back ſeldom fails to relieve that acute pain in the head, which ſometimes afflicts patients during the remiſſion of the fever.

Of the utility of *bliſters* in the *yellow fever* much can be ſaid. They, without doubt, do eſſential ſervice in this diſeaſe when judiciouſly applied. And they certainly obviate greatly the affection of the ſtomach, and create a diverſion of the excitement from internal parts. I would prefer their application to the extremities, for reaſons already aſſigned; but Dr. *E. Miller*, in his valuable paper on the analogous effects of *morbid poiſons* and malignant

diſeaſes, publiſhed in the *Medical Repoſitory* of *New-York*, ſeems to expect greater benefit from them when applied to the pit of the ſtomach. Bliſters, ſays he, are entitled to *great* confidence when applied to the *epigaſtric region* for the purpoſe of relieving the local diſeaſe of the ſtomach; but they are generally reſorted to at too late a period. They ſeem better adapted to obviate the incipient affection of the ſtomach, than to reſtore the exhauſted powers, or to arreſt the decompoſition which takes place in the advanced ſtages.

Dr. *Ruſh*, whoſe experience in this diſeaſe has been great, and whoſe talents for obſervation are equally ſtriking, ſpeaks highly of the uſe of *bliſters*. But he never employed them until the fever was ſo much weakened by depletion, that the pain induced by their ſtimulating power, deſtroyed, and, like a conductor, conveyed off all the natural pain of the body. The effects, ſays he, were as follow:

Firſt, They concentrated, like a ſalivation, all the ſcattered pains of the body, and thereby; ſecondly, reduced the pulſe in force and frequency. Thirdly, They inſtantly checked a ſickneſs at the ſtomach and vomiting; and fourthly, They often induced a gentle moiſture on the ſkin.

The uſe of *bliſters*, however, has not been univerſally admitted in the *yellow fever*. Dr. *Hillary* reprobates, in the ſtrongeſt terms, the practice of bliſtering in this diſeaſe; and affirms that he has ſeen the place where a bliſter was applied, turned

perfectly black, and ſphacelated. But the ill effects which he obſerved to ariſe from epiſpaſtics, ſufficiently evince the *ſtate* of the ſyſtem in which they were applied; and tends to eſtabliſh what has been already noticed, that ſuch applications are inadmiſſible in highly inflammatory diſeaſes, unleſs previous evacuations are uſed, ſo as to reduce the ſyſtem to *that* point, in which they may be employed with the moſt advantage.

Of the uſe of *bliſters* in the *plague*, I know nothing; but judging from the principles laid down in a preceding part of this eſſay, I have not the leaſt doubt of their proving efficacious, particularly when attended with coma.

Bliſters in *nervous diſeaſes* are greatly to be relied on. They ſtand firſt in the prophylactic liſt, and ſhould be early employed:—they are of manifeſt ſervice in the *typhus mitior*, of Dr. *Cullen*, or *ſlow nervous fever*. In the *typhus gravior*, or that ſtate of fever which is improperly denominated putrid, *bliſters* are highly valuable; and in the firſt formation of the diſeaſe, when preceded by ſome depleting remedy, have been known to remove the diſorder. A *bliſter* to the back has been found to remove the head-ach and thirſt, and to make calm the pulſe in this fever. Dr. *Lind* has related ſeveral caſes in which they proved very quickly efficacious, in obviating the oppreſſion about the precordia, &c.

In thoſe affections of the alimentary canal, deſignated by the names of *cholera morbus*, *dyſentery*,

colic, and *diarrhæa*, *bliſters* cannot be too much commended. They ſpeedily relieve thoſe diſtreſſing ſymptoms which accompany theſe diſeaſes. The early application of them does not appear unadviſable, provided there is not an undue action in the ſyſtem, as indicated by the pulſe.

In *cholera morbus* and *dyſentery*, the application of *bliſters* ſhould never be omitted. They conſiderably leſſen the pain and ſpaſm, however excruciating, by a diverſion of it to another part. In *colic*, they afford quick and certain relief; and it has been obſerved by ſome writers, I think, that very ſoon after their application, purgative medicines have more certainly produced their effects.

In *diarrhæas*, particularly of the chronic kind, *bliſters* are greatly to be depended upon. I have ſeen the moſt happy effects from their uſe. Dr. *Ruſh* has found them of very eſſential benefit in ſuch complaints. He adviſes their application to the inſide of the *thighs* or *legs*.

Bliſters have been highly ſpoken of, and have often ſucceeded in the cure of *dropſies*, after all other means have failed. Great advantages have been derived from their application in *hydrothorax*. They conſiderably leſſen the diſcharge of water, and greatly obviate the diſtreſſing dyſpnæa which accompanies this diſeaſe. Writers recommend their application to the breaſt.

Bliſters are equally ſerviceable in *anaſarca*. In the *hydrocephalic* ſtate of fever, they have been employed with much ſucceſs. Their application to the extremities appears moſt deſirable. Dr. *Dawſon* recommends them to be applied behind the ears. During their action all the ſymptoms are mitigated, and patients not unfrequently recover by their application. Mercury is frequently exhibited in all the varieties of *dropſy*, with an intent to excite ptyaliſm, though ineffectually; in ſuch caſes, its operation may be greatly aſſiſted by a *bliſter*.

Indeed, I might digreſs here and obſerve, that in all thoſe caſes in which it is the object of the practitioner to produce a ſalivation, and he has been baffled in his attempts, his wiſhes may almoſt always be accompliſhed by *bliſtering* ſome part of the body. This opinion is ſupported by the obvious advantages, that ariſe from the uſe of epiſpaſtics in preparing the ſyſtem, as it were, to take on mercurial action, in the treatment of the yellow fever, when it is thought adviſable to create a diſcharge of ſaliva. This was frequently noticed by my worthy Preceptor. The *bliſters*, to accelerate this effect, ſhould be dreſſed with *unguentum hydrargyri*. They ſeem to act in two ways: 1ſt. By expoſing a ſurface for abſorption: and 2dly, By leſſening plethora, and probably thereby taking off the congeſtion, or rather torpor under which the abſorbent ſyſtem ſometimes labours. This explanation may be fully elu-

cidated by a reference to the great efficacy of *bliſters* in the treatment of what we have been juſt ſpeaking of.

In the different ſpecies of *angina* or *cynanche* of Dr. *Cullen*, *bliſters*, according to the ſeverity of the ſymptoms, ſhould be applied to the *back*, or behind the *ears;* though greater benefit ſeems to be derived from the application of one to the *throat*. This practice is ſanctioned by the authority of the celebrated *Sir John Pringle*, who beſides commending one to be applied to the *back*, adviſes another to be laid acroſs the *throat*. Bliſters however ſhould *never* be uſed until after the employment of depleting remedies; then apply one between the *ſhoulders*, and another to the *throat* if requiſite: thus a more uſeful effect is obſerved to follow, than if both had been applied at the ſame time.

In the *cynanche parotidea*, a connexion has been obſerved between the ſeat of this diſeaſe in males, and the teſticles; ſo that a tranſlation of the morbid action often takes place to the laſt named part. In this caſe, a *bliſter* to the *ſcrotum* has been found to obviate the abſorption of that body. I mention this upon the authority of Dr. *Guthrie*, who aſſerts that a *bliſter* over the part affected will prevent the abſorption of the *teſtes* from the *mumps*, when this diſeaſe attacks thoſe organs. I have not the leaſt doubt of the fact, though my experience does not enable me to add my teſtimony to it.

I cannot but digreſs here and obſerve, that in thoſe obſtinate ſwellings of the *teſtes*, which often occur after the *gonorrhœal* diſcharge ceaſes ſuddenly to flow, a *bliſter* over the part promiſes to be attended with *much* benefit. And when we reflect on the liability of theſe bodies to become ſchirrous by the action of diſeaſe, we can offer no reaſonable objection againſt its being applied.

In *exanthematous* fevers, *bliſters* are highly neceſſary, and are almoſt always followed by favourable conſequences. This is particularly the caſe, when they are attended by ſymptoms of a comatoſe nature. In the *ſmall-pox*, of the malignant form, after its violence has been ſubdued by purſuing the antiphlogiſtic plan, or after the diſeaſe has continued for ſome days, *bliſters* ſhould be applied ſucceſſively to different parts of the body, without regard being paid to the number of the puſtules. But they are particularly ſerviceable in this diſeaſe, when attended by a ſtate of difficult *deglutition*, great *heat* in the *mouth* and *throat*, and a ſenſe of *fulneſs* in the *noſtrils*. In this caſe, greater benefit ſeems to ariſe from their application to the external fauces. In *ſmall-pox*, from *inoculation*, *bliſters* are ſeldom or never required. But in *children*, when the *convulſions*, which often precede the eruption of this diſeaſe become inordinate, *bliſters* are of infinite ſervice, and ſhould *ever* be employed. They are recommended to be applied to the extremities. Would not greater advantages ariſe from *bliſtering* the back in *all caſes* of convulſions?

In the *meaſles*, *bliſters* after bleeding, &c. are much commended, and very juſtly, for the relief of the *dypſnœa*, which accompanies this diſeaſe. The occurence of *opthalmia* and *phthiſis*, which often ſucceed this complaint, is obviated by their action. They ſhould be applied to the *ſide*, or between the *ſhoulders*.

In the *ſcarlatina anginoſa*, *bliſters* have been productive of much good; though Dr. *Withering* objects againſt their uſe. The Doctor, however, confeſſes, that when the inflammation was leſs generally diffuſed over the whole ſyſtem, they were *leſs* detrimental: an indication that his want of ſucceſs, aroſe from their improper and untimely application. Dr. *Ruſh*, when this diſeaſe was prevalent in this *city*, in the years 1783 and 4, always found *evident* advantage from the uſe of bliſters. He applied them to the *neck* or behind the *ears*.

In *pneumonia*, the efficacy of *bliſters* is truly certain. They ought not, however, to be applied till after *two* or *three* bleedings, unleſs in *moderate* caſes, and then after a *large* bleeding, one may be laid over that part which the patient moſt complains of. It was in this way Sir *John Pringle* cured many pleuriſies. Bliſters are particularly ſerviceable in the *pneumonia notha*. The *congeſtion*, under which the reſpiratory organs labour in this diſeaſe, is *moſt effectually* relieved by the application of a *large bliſter* to the *thorax*. Dr. Barton has great confidence in *bliſtering*, in this formidable complaint.

Dr. Ruſh alſo ſpeaks highly of its efficacy. Next to blood-letting, it is certainly the moſt powerful remedy.

In the incipient ſtage of *phthiſis*, or after its complete formation, *bliſters* are of infinite utility. In the firſt caſe, they frequently ſtop its progreſs; and in the next, they afford conſiderable relief as *palliatives*. They leſſen the cough and expectoration, and render the reſpiration more equable, during their action. They often induce ſleep. The repeated application of them in this diſeaſe, appears to be attended with more advantage than a perpetual one. I am inclined to adopt this opinion, from the principles laid down in this eſſay, and from having heard of a caſe of confirmed conſumption, which was cured by purſuing ſuch a plan. Bliſters in this affection produce more *certain* effects when applied to the *thorax*. In the *influenza* alſo, *bliſters* are highly ſerviceable. Dr. I. C. Smyth, in a paper publiſhed in the firſt volume, I think, of the *Medical Communications*, ſpeaks much in the praiſe of them. He found them to relieve the ſtitches in the ſide, and the dypſnœa. He applied them as near as poſſible to the part affected. Dr. Sydenham likewiſe commends the uſe of *bliſters* in this diſeaſe.

In *aſthma*, *bliſters* are often employed with very great advantage. That ſenſe of ſuffocation which is its attendant, is ſenſibly and quickly leſſened by the artificial excitement they create. Their application to the *thorax*, in all caſes, appears moſt commendable. But if, as is ſuppoſed by Dr. *Wiſtar*,

the *ſpaſmodic* aſthma depends upon an affection of the *trachea*, *bliſtering* the throat promiſes more benefit.

With reſpect to the uſe of *bliſters* in *apoplexy*, I have little to ſay. Nearly all writers recommend them. Dr. Cullen prefers their application to the head. But would not greater benefit be experienced from them, when applied to the extremities? The contrary opinion of their ſuperior efficacy, when applied to the head, appears to be founded on the ancient hypotheſis of a tranſpiration from the brain, by means of the *ſutures*.

In *palſy*, great effects have been experienced from the uſe of *bliſters*, in creating a return of ſenſation to thoſe parts which were before inſenſible. They ſhould be often applied to derive the moſt benefit from them. As ſoon, therefore, as one ceaſes to diſcharge and begins to heal, apply another, and ſo on, alternately. Perſeverance is often paramount to every difficulty. I have not the leaſt doubt of the ſucceſs that would attend ſuch a practice.

In *epilepſy*, the uſe of *bliſters* is too much neglected. I am perſuaded, that a continued repetition of them, would be of as evident utility in this diſeaſe, as in the preceding. At leaſt, we can but make the experiment. But this is not a mere matter of opinion. Dr. Mead, in his learned treatiſe, "De imperio ſolis et lunæ" furniſhes us with a caſe of epilepſy, cured by the application of a *bliſter*. When this diſeaſe is preceded by the *aura*

epileptica, *bliſtering* the *legs* ſeems moſt adviſable. I hinted at this formerly.

In *mania*, Dr. *Mead* thinks *bliſters* do more harm than good. But Dr. *Cullen* found them to be uſeful when applied to the head. Their efficacy greatly depends upon the time when they are applied. If applied in recent caſes of this diſeaſe, with conſiderable action, they are certainly injurious; but if applied after that action has been leſſened by the uſual remedies, they do much good, and may be employed with obvious benefit. In the *atonic* ſtate, they ought never to be neglected. Great ſervice will accrue from their uſe. Their application to the head or ſhoulders, ſeem moſt commendable; but in the tonic ſtate, they ſhould be applied to the extremities. This practice is very properly recommended by Dr. *Ruſh*.

In *gout*, *bliſters* are very effectual in relieving a paroxyſm of the diſeaſe; but they ſometimes render it retrocedent. This can only happen, however, when the gouty action is too great to be concentrated or tranſcended by the action of veſicatories. *Bliſters*, therefore, ſhould not be employed when the pulſe indicates the propriety of blood-letting. When the *gout* becomes irregular, attacking other parts of the ſyſtem, inſtead of fixing itſelf in the extremities, the beſt reſource is to re-invite its action to its original ſeat, by *bliſtering*. This mode of practice, is ſanctioned by Dr. *Cullen* and others.

The uſe of *bliſters* in *nephritis* does not appear to be admiſſible, in any caſe, from the *ſympathetic* action they produce in the *urinary* ſyſtem. Muſtard, however, and ſimilar applications may be uſed with conſiderable advantage. They produce the ſame good effects without a ſpecific determination to the ſame parts.

In *rheumatiſm*, when the pain affects a *particular* part, bliſters do much ſervice; and ſhould always be had recourſe to. They create a diverſion of the diſeaſed action, and thereby mitigate thoſe acute ſenſations of pain, and that ſtiffneſs, which attend this diſeaſe. They ſhould be applied over the part complained of, and repeated as often as occaſion may require.

Bliſters are of eminent ſervice in *ophthalmia*, or inflammation of the eyes, after the uſual remedies have been employed. To produce the moſt ſalutary effect, they ſhould be applied behind the ears or between the ſhoulders.

The bark of the *mezerion*, which veſicates, when applied to the legs, has been found of ſervice in this complaint. Dr. Barton thinks it more efficacious than epiſpaſtics.

Bliſters may be *advantageouſly* uſed in many other diſeaſes, and particularly in thoſe of a *local* nature; but it does not comport with the limits of this eſſay, nor is it neceſſary to inquire farther into the ſubject. The propriety of their application muſt be left to

the judgment of every practitioner, who will be regulated undoubtedly by the circumstances of the case in which he wishes to prescribe them.

Internally the efficacy of *cantharides* is truly valuable when skilfully managed. They have been employed with great success by many physicians, in the cure of various distressing complaints—their powers in this respect appear to be too much overlooked. Many diseases, that now baffle our utmost skill, might probably give way to its internal exhibition, so as to admit of the employment of other remedies. Groenvelt employed them successfully in *dropsies*, and in obstinate suppressions of urine. Dr. Mead recommends them strongly in cases of *obstinate gleets;* and speaks highly of their use in *leprous disorders*. The tincture of cantharides has been given with advantage in the *pertussis* or *hooping cough;* and it has been lately employed with some success in *pleurisies*, by a practitioner in Maryland. In *ahstma* also, it has been used with benefit. But it appears to be of particular service in the *diabetes*. Dr. Morton thinks it a specific. And when we recall to our mind its specific action on the urinary system, we cannot but concur so far with the Doctor, that it is *greatly* efficacious. Dr. Gottlieb Richter seems to be of the same opinion, and thinks it may be often used with advantage. Dr. Brisbane has related several cases of *diabetes*, that were cured by its use.

With this I finish the consideration of the subject of cantharides—a subject no less interesting than it is important. I regret that it is not more worthy of the public eye. Necessity obliged me to touch but lightly on many parts, that admitted great scope for observation; and altogether to pass over others equally relevant to the subject. But I shall console myself with the reflection, that the truly generous mind will ever view with indulgence the tender fruit of youthful acquirements.

FINIS.